

COAL

MINING

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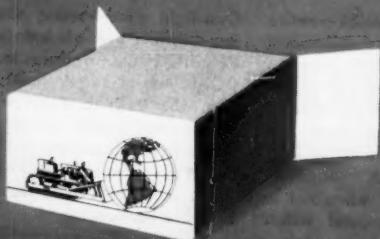
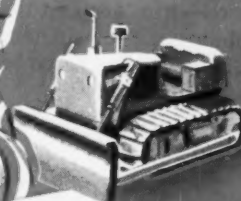
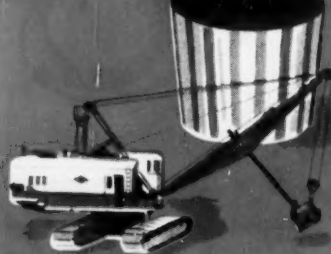
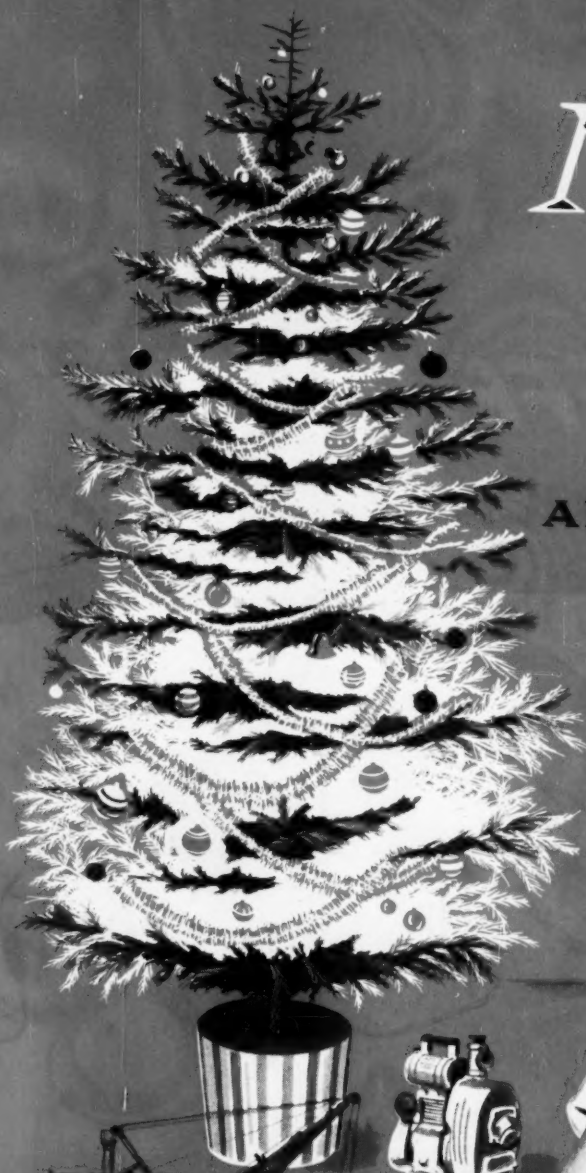
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December, 1955

Volume 32, No. 12

Merry Christmas

AND A HAPPY NEW YEAR



Use the **NEW M·S·A MinePhone**



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of your **EXISTING HAULAGE SYSTEM**

A growing number of mine operators, faced with the problem of increased production "out-running" existing haulage facilities, are finding an economical solution in M·S·A MinePhone installations.

This modern communication system, redesigned and greatly improved, permits operators to *safely* step-up present haulage operations to handle increasing tonnage output and offset major investments for new haulage equipment at the same time.

Because the M·S·A MinePhone provides clear, instant two-way voice communication, all haulage decisions are made quickly. The dispatcher is always in contact with motormen, maintenance repair shops, loading points. Motormen can reply while trips are in motion—trips keep on the move, waits on sidings are minimized. Repair needs are relayed quickly. Over-all safety is improved because one message alerts all personnel at once.

We will be happy to supply you with complete details. Write or call.



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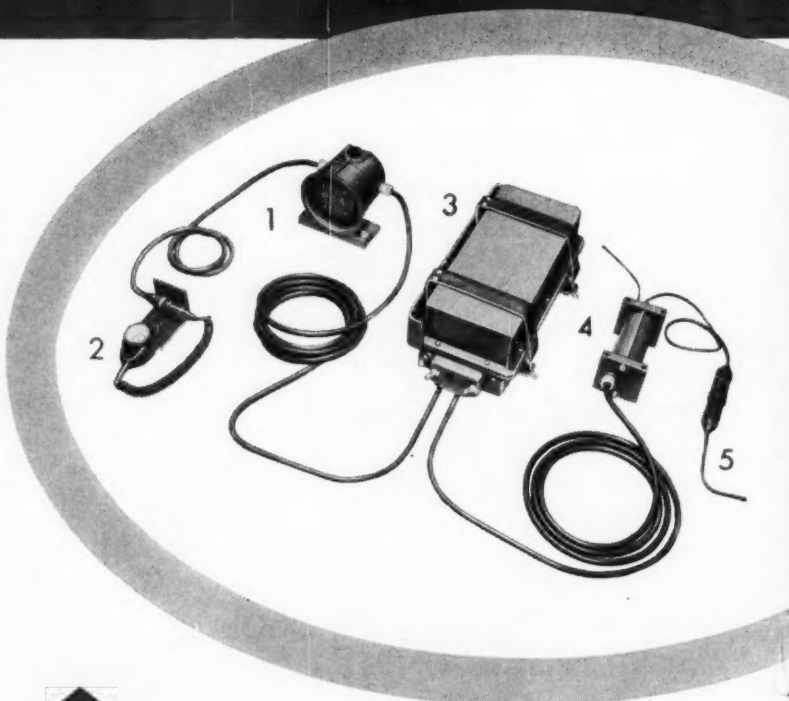
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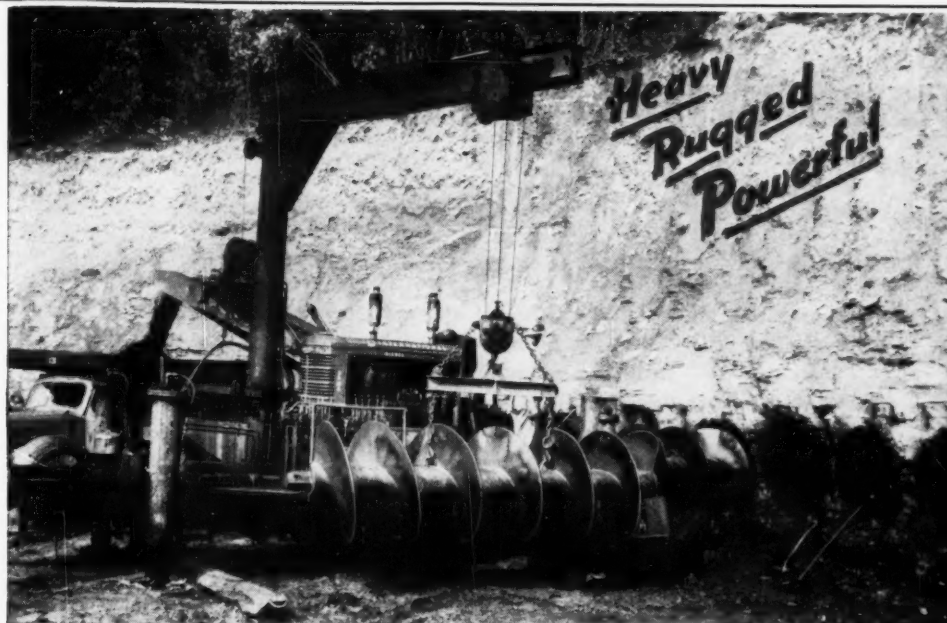
When you have a Safety problem, M.S.A. is at your service.



Here are the quality components of a single MinePhone Station

(1) **HEAVY-DUTY SPEAKER**—made of weather-resistant cast aluminum. Volume control built into housing. (2) **PRESS-TO-TALK MICROPHONE**—high quality transmission; molded neoprene case; Coiled Kord for safety. (3) **RECEIVER-TRANSMITTER**—single unit, compact. "Squelch" control maintains quiet when not in use, eliminates background noise.

Dust-tight steel housing with mounting cradle for quick installation. (4) **RESISTOR BOX**—reduces trolley wire DC power to requirements for station. (5) **IN-LINE POWER FUSE**—combination power cut-off and fuse. Waterproof, dust-tight, molded neoprene case houses a 600 volt 3 amp. fuse. All parts built for rugged, long-life service.



McCarthy Coal Recovery Drill, Model 1436-42, with 36" diameter augers 12' long as used by Excavators, Inc., Sommerville, W. Va.

● Robert B. Cleghorn, Jr., Hodgeville, West Virginia, reports his hydraulical, self-moving 42" McCarthy Coal Recovery Drill (shown below) mines "up to 500 tons of clean, low-cost quality coal per day." Cleghorn has a three-man crew—operates in pits as narrow as 34 feet. Operator has total vision, including the highwall. Model 12 handles 24' augers from 16" to 48" in diameter.

Hydraulically operated equipment on McCarthy Drills includes: jacks for levelling auger drill, auger guide, auger hoist, moving jacks and skids, and auger feed.



McCarthy Coal Recovery Drill, Model 1242-36, using 42" diameter augers 12' long.

THE SALEM TOOL COMPANY

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McCarthy
Auger
Drills
Lower
Mining
Costs



BIG REASONS WHY ALLIS-CHALMERS

5 move more dirt at

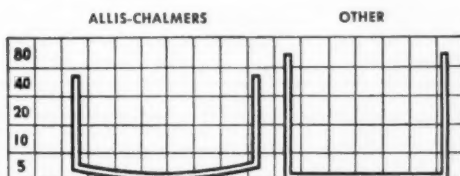
Watch an Allis-Chalmers scraper at work and you'll see that it loads bigger — travels and maneuvers more easily — puts more dirt right where you want it with the least tractor effort. Check features and you'll understand why an Allis-Chalmers scraper is able to outperform others. Then compare prices and you'll see that it gives you more scraper capacity per dollar — more for your money in every way.



S**TRIPPING AND RECLAIMING IN ONE OPERATION.** This Allis-Chalmers Model 315 Scraper strips overburden from the seam, then deposits and spreads it where the coal has been removed. It has a struck capacity of 15 cu yd (19 cu yd heaped) and incorporates all the job-proved advantages found in other Allis-Chalmers scrapers, 2 to 19 heaped capacities.

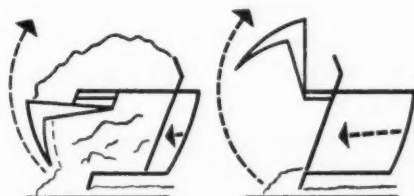
SCRAPERS

lower cost



2 LESS LOADING RESISTANCE

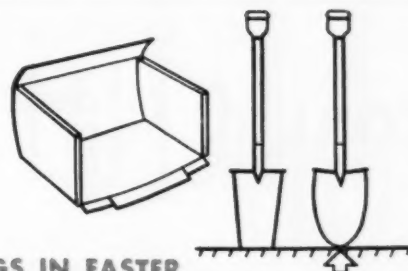
Low, wide bowl plays an important part in ease of loading. Since loading resistance is largely determined by the height to which the load is built, the lower, wider bowl of an Allis-Chalmers scraper requires less time and power to get the same yardage as other scrapers.



4 POSITIVE EJECTION ASSURES EVEN SPREADING

With patented linkage, apron lifts, then moves forward and up as ejector pushes forward. High apron lift prevents any possibility of material's jamming. Even when loaded from overhead, anything that can be put into the bowl can be easily ejected. Ejector returns to loading position automatically by spring action and apron weight.

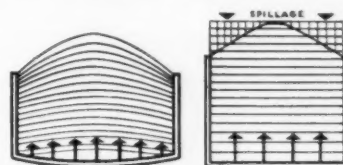
There is an Allis-Chalmers pull-type scraper for every tractor . . . every job. Write for literature or contact your Allis-Chalmers dealer.



1 DIGS IN FASTER

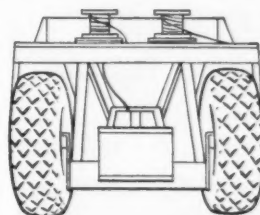
Curved and offset cutting edge on Allis-Chalmers scrapers concentrate all the tractor horsepower on the center section during initial penetration. The penetrating ability of a round-end spade helps illustrate the soundness of this Allis-Chalmers design.

Diagrams show how an automatically heaped load avoids costly spillage even though the center is built up above the sides of the bowl.



3 HEAPS AUTOMATICALLY

The combination of slightly deeper center cut and correctly angled cutting edge shapes the load as the scraper fills. The greater volume of dirt flowing into the center of the curved bowl "boils" forward, to the rear and to the sides, pulverizing the dirt, filling the voids and producing an automatically heaped load without excessive spillage.



5 HAULS, MANEUVERS EASILY

Big, low-pressure tires provide maximum flotation. The extra wide, low bowl keeps center of gravity low, helps the scraper hug the ground for safety. Front running gear has ample clearance at all points, high carrying position clears uneven ground.

Scraper main frame is shorter because exclusive linkage moves apron forward as well as upward to clear main frame at full height. The two-to-three feet shorter wheel base permits easier maneuvering. Scraper can turn in its own length.

CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

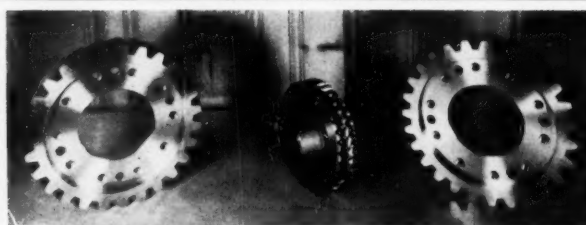


COAL MINING

Vol. XXXII December, 1955 No. 12

Contents

Do You Know	5
Here and There in the Coal Industry	5
Room and Pillar and Longwall Mining	6
Mobile Unit Furnishes Power	8
Coal Producers Meet at Bedford Springs	15
Your New	
Equipment Department	17, 18, 19, 20
Advertisers' Index	24



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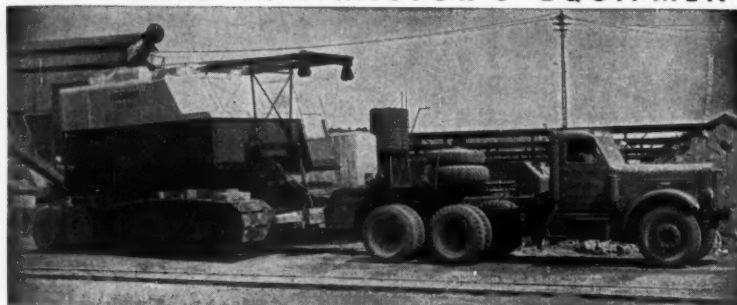
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THE SALEM TOOL COMPANY

SALEM, OHIO, U.S.A.

Do You Know?

• Trackless wastelands will be the broad highways for a new truck-train with huge balloon-like tires that has been developed.

The cross-country carrier can criss-cross the deserts, glide through jungles and roll over Arctic snow without bogging down. It is seen as offering new promise for commerce with underdeveloped areas where no roads exist.

Cars in the train are connected mechanically by a steering arrangement that makes every car follow the tracks of the lead truck.

The train can climb steeper inclines than an auto and can roll smoothly over stumps and ditches. Tires on the cars range up to ten feet in height. Some are four feet wide, covering 50 times the ground contact area of an ordinary automobile tire. The tires operate on as little as five pounds of air pressure, allowing the mechanical caravan to roll over loose snow and sand.

Each wheel in the truck-train, developed by R. G. LeTourneau, Inc., is powered by its own electric motor. One car carries a generating plant which supplies the energy to all the wheels.

A six-car train with six wheels per car would have a 36-wheel drive that will keep the train moving over almost any overland conditions.

The train will run faster on a good road than a bad one, but it can be operated successfully along rough jungle trails until the way is cleared.

A six-car freighter has recently been delivered to northern Alaska, the company said, to transport freight to isolated areas. The Army Transportation Corps has also ordered the new transport.

Another eight-car train is being used to move timber and heavy equipment at the company's proving ground.

• The Army has developed a tiny radio transmitter powered by the voice of the sender alone.

The one-and-one-half pound device requires no batteries or external source of power. It is believed to be the first time the minute energy of the human voice has been harnessed for radio broadcasting.

Small enough to fit into a telephone mouthpiece, the experimental set has already transmitted more than 600 feet with the operator speaking in normal tones. With further development, the Army Signal Corps said, the device's range may be increased to a mile.

Communications experts until now doubted that the energy in the natural sound waves of the voice could be tapped to power a radio with useful range. The voice contains so little energy that it would take a crowd of a million persons to create enough energy to light a single 100-watt bulb.

The broadcast set was developed by George Bryan, engineer for the Signal Corps Engineering Laboratories, Fort Monmouth, N. J.

Here and There in the Coal Industry



W. W. REED

• MR. W. W. REED, who has been with Island Creek since 1948 as Director of Purchases, is promoted to the position of Manager of Purchases and will report directly to the Vice President.

* * *

• ALABAMA MINING INSTITUTE has reelected W. H. Parker, president, and H. P. Sibert, secretary-treasurer. H. F. DeBardeleben, chairman of DeBardeleben Coal Corp., and P. H. Neal, president of Alabama By-Products Corp., were elected vice presidents. All Governors were reelected.

* * *

John E. Kaites has joined the sales staff of The Long Company, Oak Hill, West Virginia, manufacturers of continuous-haulage conveyor equipment.

After graduating from West Virginia University, School of Mines, in 1949, Mr. Kaites was employed by Warner Collieries for several years and then joined Ogleby-Norton & Co. Immediately prior to his present position he was resident engineer at the Brule Mine of this company.

According to Robert C. Nelson, vice president and sales manager of the company, Mr. Kaites will headquarter in Johnstown, Pa., and will represent the firm in Pennsylvania and northern West Virginia. He has already assumed his new duties.



W. F. DIAMOND

• MR. W. F. DIAMOND, formerly chief Engineer, has been appointed Assistant to the Vice President — Engineering. Mr. Diamond will be responsible for coordinating and administering all engineering functions and design and construction projects.

* * *

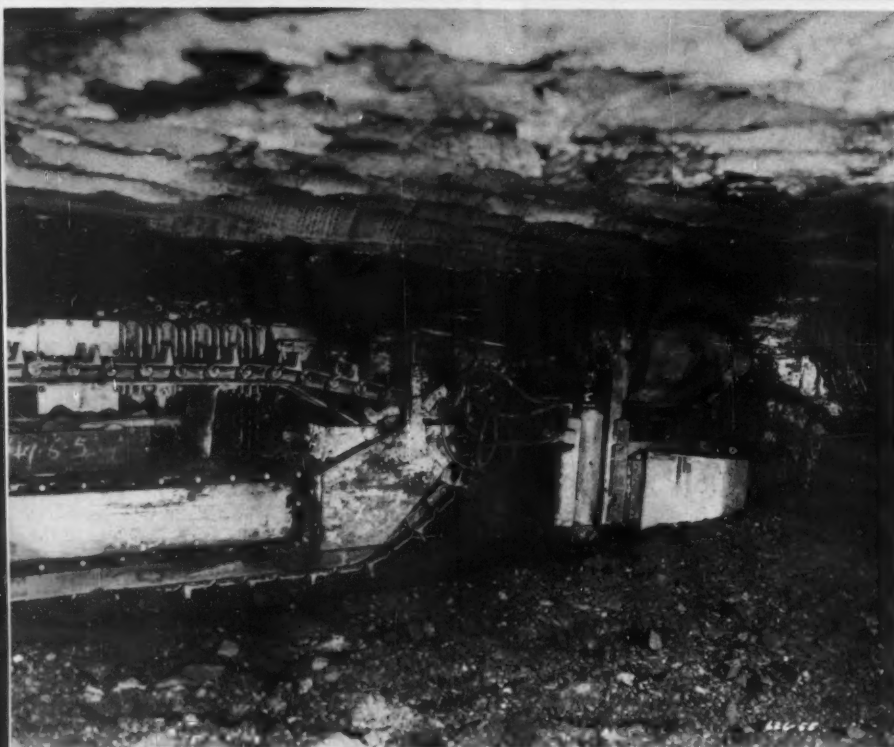
• Directors of United Electric Coal Companies have elected R. J. Hepburn vice president in charge of operations, effective Nov. 1. Mr. Frank F. Kolbe, president, also said that D. A. Ford was elected assistant treasurer and that William A. Patty had been named purchasing agent. John J. Huey will be in charge of all machinery design and maintenance.



JOHN E. KAITES

ROOM AND PILLAR AND LONGWALL MINING

By RICHARD T. TODHUNTER, SR.



Jeffrey Coal Mole in Barnes & Tucker Mine

Since before the turn of the century coal mining has participated in a vast program of mechanization which has affected every type of production and manufacture throughout the United States. The remarkable progress in the improvement of coal-mining equipment has presently culminated in the use of heavy continuous mining machines and in vastly more efficient facilities for coal preparation. Mechanization has been accompanied by an ever-increasing cost of labor and material, thus further stimulating—as a necessity for economic survival—the constant search for better methods of mining, greater efficiency and higher productivity. The increase in wages which has been both a spur and a result of mechanization has been of equal benefit to labor, and is reflected in a high level of living and educational standards. Although the greatly increased use of machinery has introduced new hazards into the getting of

coal, enlightened study and unremitting effort in the interests of safety has resulted in a steadily decreasing accident rate. The Barnes and Tucker Company has been a leader in this mechanical revolution throughout history; and continues in the fore-front of its development through exhaustive tests and experiments in adapting new methods to new equipment.

In the early 1930's the original system of room-and-pillar mining in the Barnes and Tucker Mines was changed from loading directly into mine cars at the face to hand loading on to conveyors. Before this drastic change, development had been slow, especially when compared to the rapid advancement going on now and in recent years.

In the room and pillar system of mining two 15-foot entries on 50-foot centers would be driven up a distance of 1500 feet, one entry for haulage and

the other as an aircourse. Bottom would be taken on the haulage entry for clearance, usually allowing 5½ feet to 6 feet and seldom less than 4½ feet of height. Upon reaching 1500 feet, rooms would then be turned off the haulage entry on 50-foot centers and driven a distance of 300 feet, carrying a width of 20 to 25 feet. Since no bottom was taken in rooms, there would be a slight upgrade from the haulage entry for a short distance. Six or eight rooms would be worked at one time with cross-cuts turned every 90 feet. When a room reached the 300-foot limit, the pillar would then be retreated. As soon as the rooms and pillars were finished at the extreme end of the heading, extraction of the heading stumps would begin and continue in coordination with the room-and-pillar work until the entire block, (1500' x 350') was extracted.

Ventilation was simple in this system and because of the slow extraction, the amount of explosive gas released was slight and required no great volume of air. On the other hand, the slowness allowed heaving conditions, rotting of timber, and other slow-process natural activities to develop. Because of this, room work was limited to one side because of a controlling time factor.

The equipment used with the original system is now obsolete and the handling of rock for heading clearance and room turn-outs is no longer necessary. The system now in use has made larger blocks of coal available for production with less dead work; has made possible improved ventilation, and an increased concentration of work, allowing more and better supervision. However, the old system, as used, was good under the facilities available and prevailed for many years, going back, in fact, to the days of animal haulage.

The panel system now in use at the Barnes and Tucker Mines has made possible the efficient mining of a large area of coal with a uniform line of full extraction as development advances.

At our Lancashire No. 15 mine the coal seam is 42" thick with a top bone averaging 8½". The roof is a strong black shale with some local areas having a cross-bedded sandstone. The bottom is fireclay averaging 6" to 8", underlain in turn by 6" to 10" of coal, 8" to 14" of fireclay, and 1' to 3' of coal. The mine has an average dip of 3% while grades vary locally up to 17%. The coal seam itself is uniform in height.

At this mine, two main entries on 3200-foot centers are advanced into the main body of coal. Panel entries are turned on 3200-foot centers, off the left of one main, and off the right of the other, and driven to the property boundaries, while butt entries are driven on 720-foot centers between the mains. Butt entries are also turned off the panel entries on 720-foot centers, and it is through them that complete extraction is had between the mains and panel entries. At panel intervals cross-headings are kept between the mains for haulage, drainage and ventilation.

Main and panel entries have five headings each, with the three center headings used for intake air, and the outer two for return air. The center heading is for haulage with bottom being taken to provide 6 feet of clearance. The two remaining intakes are maintained as travelling ways for emergencies. As Butt entries are developed some pillars are left standing along the main and panel entries to provide additional return airways.

Overcasts and undercasts are used to carry return air over intake headings and each panel is on a separate split which in turn is split to give each butt its own air. Regulators are used on butts to control the amount of air delivered to them, and also the amount of air in the panel. Bleeder rooms are left standing at the extreme end of each butt entry to provide an adequate amount of air to remove any gas from mined-out areas. This air is controlled by a regulator where the last room of the first butt of a panel is cut through to the main return aircourse. With the panel system, no part of the mine is sealed off, and all worked-out areas



Shuttle Car Emptying onto Jeffrey Belt in Barnes & Tucker Mine

have some ventilation. A negative pressure is held against all worked-out areas, thus eliminating greatly the hazard of gas outburst or the building up of pressure against stoppings.

When the butts of a panel are finished, the stumps and pillars remaining along the panel entries are extracted by retreating from the extreme end of the panel.

Because of good natural conditions, it will probably not be necessary to consider other systems of mining for several generations. The system is serving its purpose well, and will probably continue to do so for quite some time.

This type of butt heading was introduced with the use of belt conveyors, at Lancashire No. 15, and has been used since that time. Three parallel headings on 60-foot centers are driven, the outer two maintained as aircourses while the center one carries the belt haulage.

Room development is started on the side nearest the main return airway as soon as heading advancement is suf-

ficient to turn off three or four rooms. Rooms are worked on 45 to 60-foot centers on one side of the entry to a distance of 300 feet, with cross-cuts every 90 feet. After rooms are started, the headings are advanced simultaneously with the room-and-pillar extraction. This work goes on until the entry advances 1500 feet and all rooms and pillars are extracted on the one side. Upon reaching the 1500 foot limit, rooms are started on the remaining side, and as rooms-and-pillars are extracted, the heading stumps are retreated.

Although ventilation is simple on a butt good judgment is necessary in its use. The heading from which the rooms are first developed is used as the return aircourse while the other two are used as intakes. As the entry advances, permanent concrete-block stoppings are placed between all three headings, thus giving two intakes and one return. Air is directed from the intakes across the entry face, then through the rooms, and across pillar falls and on out the return airway. After the air passes the

(Continued on Page 18)



From left to right, Darwin Youngs, General Manager, and Bernard Youngs, Vice President, of Saxton Coal Corporation study the route of the 13½-yard walking dragline. This unit was powered by Caterpillar mobile power. This dragline transfer began near Somerville, Ind. The seven-mile trip took seven days.

MOBILE UNIT FURNISHES POWER TO MOVE LARGE ELECTRIC DRAGLINE

Transferring a 560-ton Marion 7400 walking dragline seven miles with mobile power has just been accomplished by Saxton Coal Corporation of Petersburg, Indiana. It is believed to be the first time a dragline of this size has been moved this far with this kind of power in a period of only 7 days.

Initial planning for this huge undertaking began over a year and half ago since the present area would be depleted at the end of this period. Many details were considered such as selecting the best route, the approximate date, and most important of all—what type of power source to use.

A power source was needed to provide enough electricity for the dragline to walk and also to make some of its own cuts. Three methods of getting the unit moved were available: (1) the unit could be disassembled and then reassembled at the new area. This method would cost approximately \$60,000 and take three months. (2) Utility power could be used which meant erecting power lines, taking them down and erecting them again. This method would cost about \$45,000 and take 30 days. (3) Mobile power could be used which would cost about \$30,000 and would take less time.

About a year ago executives from Saxton were attending a meeting of the

Open Pit Mining Association in Hibbing, Minn. During this time a Caterpillar Mobile Electric Set was on display in the downtown area. This unit is powered by a Caterpillar D397 Electric Set which is capable of delivering 315kw. Mr. Bernard Youngs, vice-president, and Darwin Youngs, general manager of Saxton, inquired about the possibility of using this set for the move. It was learned that more than one set would be needed for this transfer.

Upon returning home further negotiations were carried out with Caterpillar Tractor Co., Peoria, Ill., and a tentative date was arranged. It was also agreed that the second unit should be a D397 to reduce complications. This set was located and rented from Geo. M. Brewster & Son Inc., Bogota, N. J. With these two units a total of 630 kw. would be available.

After the mobile electric units were arranged for, right-of-way easements across private property had to be negotiated. Working permits also had to be acquired for the railroad and power-line crossings. Obtaining these took a period of six months.

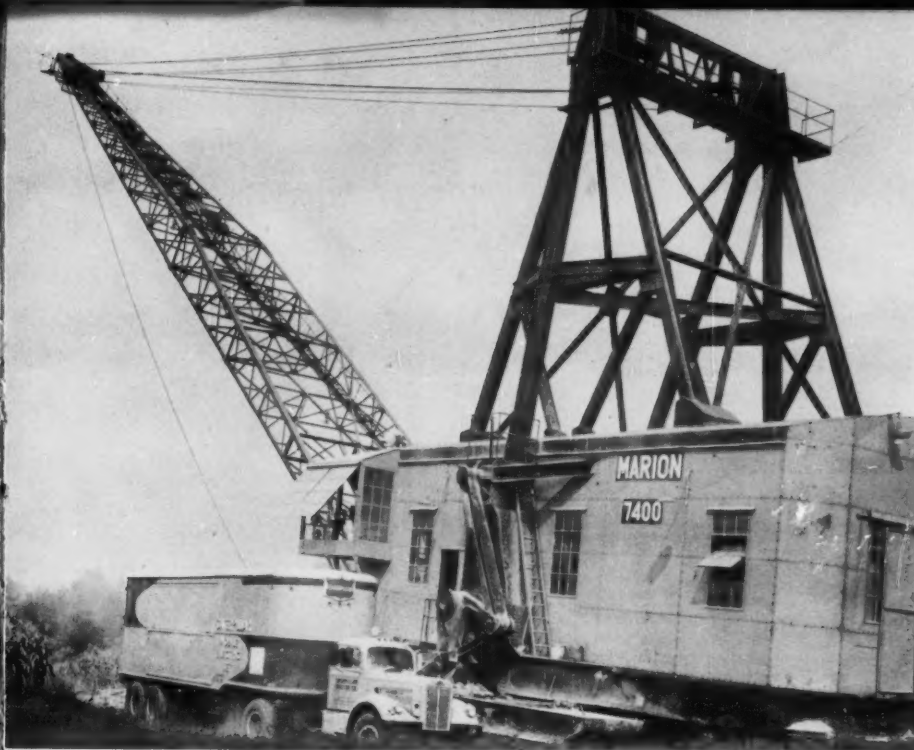
Payments for easements across private property were decided upon a per acre basis. Crop damage was considered as a separate item and was paid

for after the dragline crossed the property. Usually a 100-foot swath was used for the passage. Damage to fences could be handled two ways. The farmer could repair his own fence and keep records of his time and materials and be reimbursed, or a temporary fence would be set up and a permanent one erected after the dragline reached its destination. Usually the farmer selected the latter method.

With preparations completed, the dragline was ready to be moved from the old area near Somerville, Ind. The first obstacle was a 69,000 volt power line owned by the Southern Indiana Gas & Electric Co. This line could only be crossed on Sunday because no alternative line was available which could handle the existing week day load. After this crossing, only a short distance was covered before highway No. 57 was encountered.

For the highway crossings, assistance was received from the State Highway Patrol. All traffic was detoured. To protect this asphalt highway five feet of dirt was heaped upon the road by the dragline. Two Caterpillar D7 Tractors were used to dress up this covering and the immediate approaches.

A second state highway, No. 64, was crossed in a similar manner. All



This Caterpillar Mobile Electric Set pulls around the Marion 7400 walking dragline which was moved seven miles from an area near Somerville, Ind. Two mobile electric sets were used to do the job. The unit is moving beyond the dragline 1000 feet. The dragline could move 2000 feet with each move of the electric units.

asphalt roads received a protective covering. Other county gravel roads were crossed by building approaches only.

For crossing the railroads the tracks were removed plus the ties. It was necessary to remove two sections of each track. This work was done by the respective railroad companies. The New York Central was crossed two different places and the Algiers, Winslow and Western Railroad was crossed once. This latter road is one of the smallest roads in existence—a total of sixteen miles long and serves only strip mining companies.

Neither road has any passenger train service. The New York Central has ten freights a day and the Algiers, Winslow and Western has about five freights. To cross these roads no protective covering was used. However, approaches were built by the dragline and the Caterpillar D7 Tractors.

Power lines were taken down by the power company crews. Lines of the Southern Indiana Gas & Electric Co. and Public Service Company of Indiana were crossed. All of these lines were of 33,000 volts except one which has 69,000 volts.

In all a total of seven roads, five power lines and three railroads were crossed. No special charge was levied

by these concerns. Only charges for time and labor were assessed.

One thousand feet of power cable was used to walk the dragline. This allowed the unit to travel 2,000 feet before the Caterpillar Mobile Electric Sets would have to unhook and move. They would reset 1,000 feet beyond the dragline.

Whenever possible the dragline traveled around the clock. However, when highways, railroads, or power lines were reached, night travel would cease. On one occasion a railroad was

neared late Saturday night and all operations ceased until the following Monday.

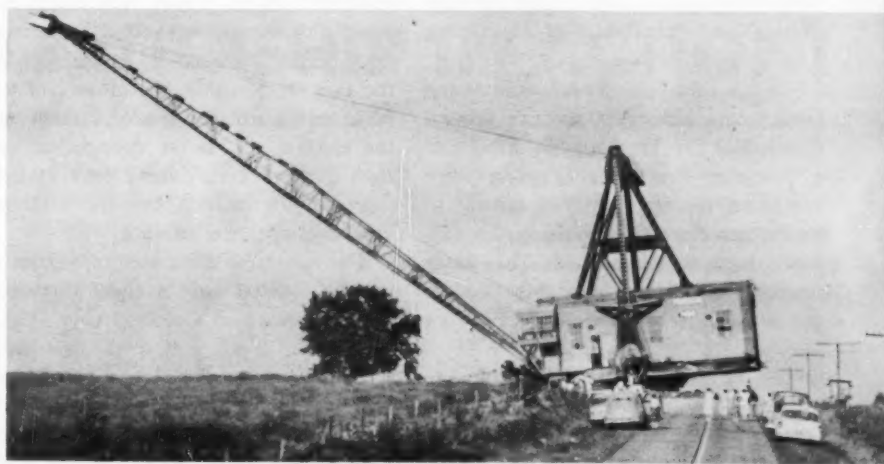
To facilitate this round the clock operation took a total of 18 men. Each shift was composed of six men. This did not include the Caterpillar personnel which had charge of the electric sets or the supervisory personnel of Saxton.

The most difficult obstacles were the state highways, the bottom land and the South Fork of the Patoka River. The county roads, railroads and power lines were not too difficult.

Tests were conducted on surrounding bottom land and no solid footing existed in some areas down to 75 feet. The top layer rested upon sand or muck.

In one spot of this low terrain the sod started to ball up in front of the dragline's tub or base. It took approximately one hour to negotiate this spot with the help of the Caterpillar D7 Tractor. In similar areas which followed, the sod was removed to prevent a recurrence. There was always the danger in areas such as this that the dragline would bury itself.

Crossing the South Fork of the Patoka River presented the greatest potential risk. This river is approximately fifty feet wide and twelve feet deep. Although the flow is not great there was the potential threat of a heavy rain. During rains this stream becomes a torrent.



In the process of traversing highway No. 64 is this huge Marion 7400 dragline used by Saxton Coal Corporation for coal stripping. Two Caterpillar Electric Sets provided the power for this journey from Somerville, Ind., to the new mine area near Oakland City, Ind. The trip covered seven miles.

Instead of laying tubes in the stream bottom, a diversion canal was built for the water to pass. To allow the walking dragline to cross, approximately 3000 cubic yards of dirt were dug by the dragline itself. This was done when the unit arrived at the river. The crossing was not prepared previously because the fill has to be kept as dry as possible.

As it was, the dragline tub sank into the fill as much as a foot. Needless to say if trouble had been experienced in this spot the journey of the Marion 7400 would probably have ceased, and the disassembling job begun.

After crossing the Patoka the dragline dug out the channel. In the meanwhile the Caterpillar D7 Tractors were clearing land on ahead and skimming the top soil from the soft bottom land.

The dragline bucket was advantageous not only for digging but also as a counter-weight. When negotiating soft spots or hills the bucket was lowered and allowed to dig itself into the earth. This greatly improved the unit's stability.

Several times the dragline's route passed over the little and big-inch pipelines. It also passed over several waterlines. Before passing over these lines a protective cover of earth was laid over the area. The amount of fill used varied according to the depth of these lines.

On one occasion a member of the Oakland City (Ind.) Water Department used a diving rod to locate a siphon pipe. This seemed ironic with the tens of thousands of dollars of equipment used during this operation.

To keep the friendly relations of the landowners along the route a second Caterpillar D7 Tractor with dozer and a Bucyrus Erie 15B dragline were rented to replace damaged terrain to its former state. Many times the farmer's land was improved. This extra tractor was used to clear land ahead of the dragline whenever its duties were needed.

The Marion 7400 will average approximately 400 feet an hour in good going. With each step it will cover about six feet. During this seven mile trip the 560-ton unit was lifted up and down approximately 7400 times.

Good weather prevailed throughout



Preparing to cross the South Fork of the Patoka River this Marion walking dragline and the Cat D7 Tractor work together preparing to fill. Approximately 3000 cubic yards of material were needed. This dragline, powered by two Caterpillar Mobile Electric Sets, was moved from Somerville, Ind. The dragline is owned by Saxton Coal Corporation.

the journey and only minor troubles occurred. Considering the length of the route and the hazards encountered the operation progressed very well. Bernard Youngs, vice-president of Saxton Coal Corporation, said, "Mobile power is the only way to move one of these machines."

The Caterpillar Mobile Electric Sets supplied adequate power for the dragline's operations. While walking the peak load was 560 kw. and 600 kw. peak when digging (this was in heavy material). More power was required when the dragline traveled downhill than uphill. Paradoxical perhaps, but the unit in downhill operation had to be lifted against the grade. Voltage at the electric sets never dropped more than five per cent during peak loads; this did not include the line loss of 1000 feet of power cable.

The new strip mine area of Saxton's will be located only a short distance from the town of Oakland City. This town of 3500 population was extremely interested in the progress of the dragline. During the evening, the local people would drop out to watch the progress. Moreover, when the unit was passing through corn fields, roasting ears could be had merely for the picking.

Oakland City's inhabitants work in the surrounding strip mines or in the industrial city of Evansville a city of 175,000 located 30 miles to the south.

The new strip area near Oakland City is expected to produce slightly more coal per year than the old area which was approximately 200,000 tons.

In 1941 the Saxton Coal Corporation was formed and headed by Kenneth Youngs, who continues as president of the firm. In 1951 operations were transferred to Petersburg, Ind. In August of 1953 a mine area was opened in Illinois. Counting the Indiana and Illinois mines, total production will hit half a million tons.

The corporation has enough coal reserves to last ten years in Indiana and five years in Illinois. These reserves lie in widely separated tracts. Thus one central location is not feasible.

Coal which is mined from the new area will be shipped to the tippie located at the old area near Somerville. This tippie features a calcium-chloride washer rated at 220 tons per hour. The washer is one of the largest ever made and was the first of its kind in Indiana. This method requires no extensive settling ponds and produces dustless and freeze-proof coal. ●



This year, Caterpillar Dealers and Caterpillar Tractor Co. announced more than 20 new major products, expanded and built new dealer facilities, and completed a \$200 million plant expansion program. Your Caterpillar Dealer reports on . . .

A YEAR OF LEADERSHIP IN ACTION!

THE YEAR 1955 has been the biggest year in the construction industry. It has been made great by that vast army of builders who have produced the highways, the dams, the housing developments and the new airports which contribute so much to our nation's growth and greatness.

Construction men, however, have been assisted in compiling this great record by machines — machines which can do more work in less time and at less cost than ever before.

Although the machines represent the end product of the nation's equipment manufacturers, they are a reflection of the needs of the men who use them.

These three factors — construction demands, the men to do the job and the machines to fit their needs — have allowed Caterpillar Tractor Co. and its dealers to make 1955 their most important year.

For in 1955 Caterpillar announced more than 20 new machines — power-

ful, productive, profit-making — to its already extensive line. It completed its ten-year \$200 million plant expansion. And its dealers improved and expanded their facilities with which to serve customers.

In all product lines Caterpillar made improvements or announced new products — always with the contractor and his needs in mind. In fact, the customer has dictated the design features incorporated in Caterpillar equipment.

CATERPILLAR LEADERSHIP IN ACTION



The Cat No. 12 Motor Grader now features the oil clutch plus additional horsepower. No. 212 and No. 112 models are also improved.



Full-load 40° tip-back bucket and exclusive Cat oil clutch are just two of the many features in new No. 955 and No. 933 Traxcavators.

In the minds of most contractors, perhaps, the announcement of the D9 was one of the most dramatic advances of the earthmoving industry in 1955. The story of its development reflects in some measure the effort which went into the introduction of Caterpillar's new and improved machines this year.

Briefly, customers wanted a crawler tractor with more power, higher production and greater fuel efficiency. And they wanted the tractor to have the proved durability and operating ease of the Cat D8 Tractor.

If the customer wanted that kind of a machine, his partner, the Caterpillar Dealer, wanted him to have it. After a year of pre-production field testing backed by several years of research, the answer to the customer's request became reality in the Caterpillar D9 Tractor.

The end result was a 28-ton, 230 drawbar horsepower tractor, with a turbocharged engine, direct drive with oil clutch, or torque converter drive, as the

customer wished. It was 17 feet long, 10 feet wide and nearly 9 feet high.

New Manufacturing Facilities Completed

Equal to the gigantic task of field testing the new machines introduced by Caterpillar in 1955, was the task of finding space to build them. The Peoria, Ill., plant was operating at full capacity producing the five track-type tractors in the line, as well as motor graders, wheel tractors and engines. The answer to the problem was to build a new plant for the manufacture of motor graders and wheel tractors, and build the D9 at the Peoria plant.

The new factory was built in Decatur, just 80 miles from Peoria. Money for the facilities was part of \$200 million Caterpillar had planned to spend in postwar expansion. Ground was broken for construction on February 22, 1954. Located on a 425-acre tract of land, the two main buildings provide more than 840,000 square feet of manufacturing and office space. Sixteen months after breaking ground, in early June, the first Decatur-built motor grader rolled off the assembly line.

Products for the Pipeliner

Other customers told Caterpillar Dealers what they wanted, too. Piping contractors asked for a bigger, more productive pipelayer, not merely a tractor with an attachment, to handle larger and heavier pipe. Caterpillar

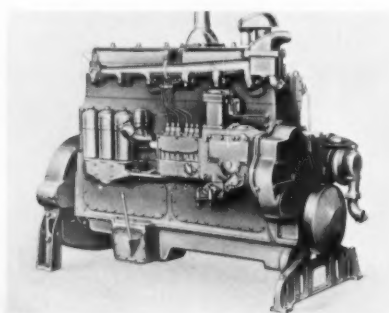
gave them the No. 583 Pipelayer — a 39-ton, 190 horsepower with torque converter, high-clearance, single, integrated, and balanced machine designed to lay pipe fast, as big as it comes, over the roughest terrain. These same contractors and others also wanted a portable, factory-built, one-dealer-served welder. Caterpillar, in cooperation with The Lincoln Electric Co., gave them the D315 Twin Arc-Welder.

New Electric Sets — 2 New Traxcavators

Another challenge in the field of electric power came from quarry operators, excavators, oil field and electrical engineers who wanted a more compact, accurately matched electric generator and diesel engine set. So, in August, Caterpillar Dealers announced the availability of a new, heavy-duty, compact, single bearing, self-regulating generator.

In addition, a new line of mobile and portable, compact, diesel electric sets was announced.

Contractors expressed their desire for larger capacity, more ruggedly built materials handlers. Caterpillar, benefiting from experience in that field, came out with the 1½ yd., No. 955 and 1 yd., No. 933 Traxcavators. Both of these machines feature a 40-degree tip-back bucket that gives greater breakout force as well as capacity to retain bigger loads. Both units are equipped with the smooth-running, long-lived oil clutch.



Four new Cat Diesel Engines offer engine users more horsepower in more compact space.

New and Improved Track-type Tractors

But that wasn't all. Exhaustive research spent on the D9, combined with more than 50 years experience building track-type tractors, equipped Caterpillar with much more abundant knowledge for improving engine design, turbocharging, oil clutch and torque drive designs. Many of these improvements were incorporated into other products and announced this year by Caterpillar Dealers.

A new 155 drawbar horsepower D8 Tractor was announced in two models, the direct drive D8 (Series E), with 5 forward and 5 reverse speeds; and 3-stage torque converter D8 (Series D). The D8 (Series D), with speeds up to 7.4 mph., has the ability to adjust drawbar pull to the load. The D7, too, profited from the lengthy research. It now has the oil clutch. Its horsepower was increased by 19% to 102 drawbar horsepower. In addition, the D6, D4, and D2 were improved this year. Each of these tractors now offers more horsepower, greater serviceability and more efficiency. The oil clutch is standard in the D6, optional in the D4 and the D2.

Four new, more powerful, more efficient, industrial and construction Cat Engines also appeared on the market during 1955. They are the D342, the D339, the D337 (Series F), and the D326 (Series F).



The new Cat DW21 and DW20 Wheel Tractors feature 300 HP each—the DW15, 186 HP. New No. 470 and No. 456 "Lowbowl" Scrapers for the DW21 and DW20 permit greater loads.

New, Powerful Wheel Tractors

Caterpillar wheel-type Tractors also garnered their share of improvements from these years of research. Most noteworthy was the turbocharger, which made the new D337 Engine (Series F) of the DW21 and DW20 wheel Tractors capable of 300 horsepower (maximum output). New, wide base, 29.5 x 29 tires also were added to these wheel tractors to give them better traction and flotation. Announced with these tractors was a new concept in scraper engineering—the exclusive Caterpillar "Lowbowl" design. Shallower, but wider and longer than former scrapers, the new "Lowbowl" Scrapers permit faster loading and greater capacity. The DW15 was also announced with a new 186 horsepower engine (maximum output).

Cat Quality Never Sacrificed

Research, new facilities, dealer expansion, unequalled experience and employee know-how made the announcement of all these products possible in 1955. Here are just a few statistics that show the extent of the work involved in the conception and final production of the new D9, D8 and D7 Tractors, alone: 3,315 factory work orders issued; 22,395 tools designed and built; and 228 factory machines redesigned.

Sounds like a lot of activity, and it was. But in its desire to give customers the new equipment they wanted, Caterpillar never once sacrificed rigid manufacturing controls, or the use of only the finest materials available.

Caterpillar Equipment Exposition gets under way with a parade of over \$2 million worth of equipment.



Inspection, too, kept up with new products by checking the quality of raw materials and finished products. Heat treating facilities were improved, giving more than 7,000 different parts added strength and hardness. Rigid manufacturing standards were maintained every step of the way. And to provide parts service for all Caterpillar machines, regardless of when they were built, Caterpillar continued this year to expand its parts manufacturing facilities at Joliet, Ill., York, Pa., San Leandro, Calif., and Peoria, Ill. Facilities at nine parts warehouses, too, were expanded and improved.

Caterpillar Shows Products to the World

During this one single year, then, Caterpillar relocated assembly lines, completed a new manufacturing plant, and other facilities, put all its resources to work hard and long to bring customers the products they wanted. Caterpillar and Caterpillar Dealers told the world about these products through advertisements and news releases, and indirectly through the biggest Caterpillar Exposition ever held by the Company for its domestic and foreign dealers. Appropriately, the theme was "Leadership in Action." For in Peoria, Caterpillar Dealer people and members of the press saw these products, saw how they were designed, researched and built. On the Company's proving grounds,

they saw a dramatic display of what these machines could actually do in terms of work.

We Caterpillar Dealers were very enthusiastic over the Caterpillar Exposition. We were proud of the part we played in helping to make it possible . . . proud to have worked hand in hand with Caterpillar to bring you in 1955, the new and improved equipment you wanted. Dealers pitched in with 23 new and expanded places of business. In addition, we increased our sales,

service and parts facilities in our shops, in the fields, and on the scene of highway or other construction jobs.

Biggest and Busiest Year

The year 1955 will go down in the history of Caterpillar Dealers and the Company as one of the most important, biggest and busiest to date. The new facilities, greater production ability and plant and dealer expansion will mean the delivery of more Caterpillar products to customers during 1956.



Typical of Caterpillar Dealer shop service facilities is this modern repair headquarters. In 1955, 23 new dealer places of business were built or expanded to provide better service.

Printed in U.S.A.

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CM-5

1955 — ANOTHER YEAR OF CATERPILLAR LEADERSHIP IN ACTION

P1955A

Central Pennsylvania

COAL PRODUCERS MEET AT BEDFORD SPRINGS

Dr. Paul Brown, American Coal Association, was the principal speaker at the banquet. Left is Secretary R. T. Laing; right are R. H. Moore, incoming president and C. J. Datzel, Federal Mine Inspector.

Left: Walter Jones, retired, E. F. Osborne, Dean, Mineral Industries, Penna. State University, Jos. T. Kremer, Chief Dept. of Mines, Penna.



Left: Frank R. Smith, Attorney for the Central Penna. Coal Operators Assn., Dean Steidel, Chairman, Mine Safety Board of Review, Federal Inspection, Wm. H. Ritter, Pres., Reitz Coal Co., Lewis E. Evans, Deputy Secretary, Penna. Dept. of Mines.



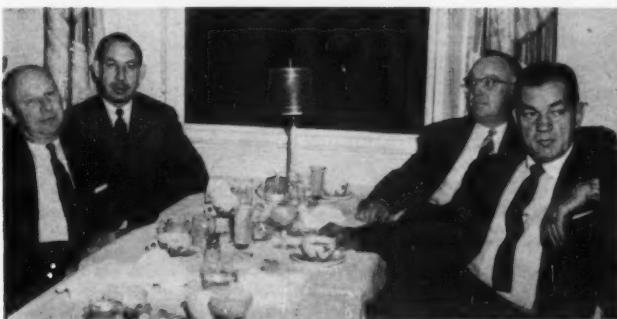
Man attends such meetings as this because he is curious — curious to know what other men in his line of endeavour are saying and thinking. Ideas arise in the brains of individuals and are not manufactured in a production line. Advanced understanding comes only through creative thinking of individuals. Without curiosity, man would be nothing, for man's inherent characteristic is the desire to do better — to build. As long as man is curious about the world around him, scientific knowledge will grow, for science has given man the choice between want

and abundance. Science is freeing man from ancient superstitions and fears. Conception of nature and of the world, through science, is freeing man's mind as scientific control of matter and energy is freeing his hands.

Learning in an industry affects scientific progress in that industry. Technological advancement affects the speed with which an industry translates scientific findings into practical application. New knowledge in the coal mining industry is essential to future progress and our wellspring of future talent must be enlarged. Honest intellectual

inquiry, by trained minds, into complete automation is sorely needed. Scientific expansion, with its new automatic production, will give us the time needed for cultural advancement; will give us the needed time to gain newer knowledge for future progress.

Meetings like this one held at the Bedford Springs Hotel by the Central Pennsylvania Coal Producers Association can do much good for it brings together the men who can make necessary decisions and who do not have the opportunity to meet in any other way.



Left: M. J. Ackerman Penelec Coal Co., G. A. Shoemaker, Pittsburgh Consolidation Coal Co., J. R. Sanner, Ebensburg Coal Co., Jack Berkebile, Penn Machine Co.



Refreshments being served before the banquet.



Left: Leonard Raffette, John Libeyrinsky, Sam Given, Jr., Robert McGinnis, John F. Simpson, H. B. Bartley, F. C. Gannon, A. J. Beitel, Ralph Maneval, Matt Jarmin, all with the Imperial Coal Corp.



Left: L. J. Huegel, Pittsburgh Consolidation Coal Co., Wayne Tomb, Counsel, Truman Johnson, Northern W. Va. Coal Assn., C. E. McGlaughlin, Bituminous coal Research, Harry A. Sutter, Western Penna. Coal Operators Assn., Lester Thomas, United Mine Workers of America, R. A. Lambert, Penna. Dept. of Mines.



Left: Dan Yonkoske, John R. Young, F. P. Roberts, G. T. Atkins, all from the Barnes & Tucker Coal Co., R. J. Cripp, Rochester & Pittsburgh Coal Co., R. T. Todhunter, Jr., Barnes & Tucker Coal Co.



Left: Tom Crocker, Mgr., Bethlehem Mines Corp., C. A. Owen, Chairman, Board, J. N. Geyer, V. P., Geo. E. Owen, Pres., W. J. Cahill, Treas., all of the Imperial Coal Corp., Heath Clark, Chairman, Finance, Rochester & Pittsburgh Coal Co., Ralph Roos and Vernon Frichman of the Rochester & Pittsburgh Coal Co.

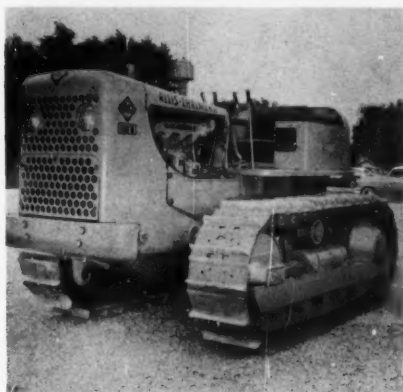


Left: R. R. Bowie, Pres., Bowie Coal Co., Frank Mahoney, Secy., and W. A. Crawford, Attorney for the Mineral Producers Assn.



Left: John S. Todhunter, Supt., Richard S. Todhunter, Pres., H. H. Hamilton, V. P., Barnes & Tucker Coal Co., John E. Evans, Sr., Pres., Pine Township Coal Co., Inc., O. A. Schwamke, Hulbert Oil & Grease Co., Lew Robbins, Barnes & Tucker Coal Co., Howard Shay, Barnes & Tucker Coal Co., Albert Evans, V. P., Pine Township Coal Co., Inc.

YOUR NEW EQUIPMENT DEPARTMENT



ALLIS-CHALMERS ANNOUNCES NEW HD-6 CRAWLER TRACTOR AND HD-6G TRACTOR SHOVEL

Allis-Chalmers has announced two new Diesel-powered units . . . the 12,400 lb. HD-6 crawler tractor and the 19,600 lb. HD-6G tractor shovel with a rated capacity of $1\frac{1}{3}$ cu. yd. Both were introduced in line with the company's engineering development and production policy to provide equipment of the highest performance and dependability, and with the lowest job cost possible.

Many features found in other crawler tractor models recently introduced by Allis-Chalmers, including the HD-21, HD-16, and the HD-11 and HD-11G, are incorporated in the HD-6 and HD-6G. These include the new Allis-Chalmers Diesel engine with follow-through combustion; the "Wrap-Around" radiator guard that provides better tractor balance and reduces tractor-dozzer combination costs; tough All-Steel Box-Type "A" main frame which makes possible unit construction for easy service accessibility; one-piece line-bored steering clutch and final drive housing that provides longer gear life; straddle-mounted double reduction final drive gears mounted on tapered roller bearings to reduce gear spreading and corner loading of gears; roller bearing truck wheels with 1000-hour lubrication that saves maintenance time and

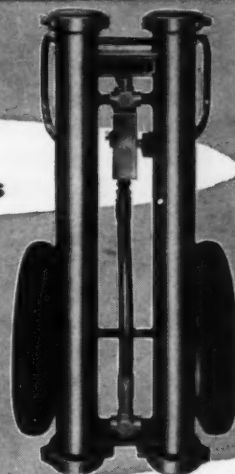
(Continued on Page 20)

**NOW - ON THE SPOT
FILTRATION . . .**

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**SCHROEDER
FILTER BUGGY**

**It rolls
right to the job!**



Protect your hydraulic equipment . . . save oil . . . reduce down time . . . cut repair costs with a Schroeder Filter Buggy. Mounted on rubber tired wheels, the Buggy, only $48\frac{1}{2}$ " high x $26\frac{1}{2}$ " wide, can be easily pushed from one machine location to another.

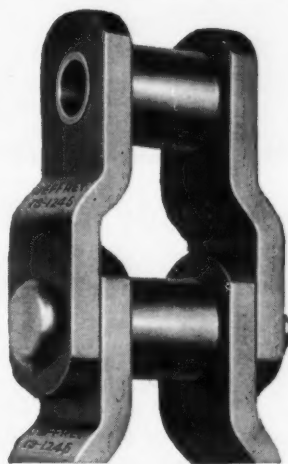
13,944 square inch filter area!

The pleated radial fins of the phenolic impregnated cellulose filter furnish 13,944 square inches of filtering area. This highly efficient filter has an initial particle selection of 10 Microns (.00039) and filters out particles so small they cannot be seen with the naked eye . . . however, it will not remove additives nor will it affect chemical or waterbase flame-resistant fluids.

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Better equipment results when Jeffrey top quality STR drive chain is used for flexible transmission of power.

Jeffrey STR has maximum strength . . . minimum weight . . . and added reserves for long periods of normal wear plus shock from unexpected overloads.

If you operate mixers, dredges, power shovels, ditchers, loaders or other unit machines, see us for information on Jeffrey STR. Replace worn out chains with Jeffrey equipment.

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Room And Pillar And Longwall Mining

(Continued from Page 7)

last permanent stopping on the intakes, it is directed through the remainder of works by means of Burlap Brattice cloth hung on posts or wooden stringers.

A butt heading is extracted in less than a year with about 96,000 tons produced.

Although continuous mining machines are the leading tonnage producers at Lancashire No. 15 Mine, some mobile loading units are still used where conditions are such as to preclude the use of the heavier more unwieldy equipment.

Such mobile unit, fully manned with eleven men, will have one loading machine, one cutting machine, two shuttle cars, one coal drill, one mother belt, and one car spotting hoist. Rooms and entries are kept on 60-foot centers and places are cut to a depth of 6 feet with widths as follows: headings 14 to 18 feet, rooms 35 feet, pillars 25 to 80 feet. Room-and-pillar extraction is kept on 45-degree lines while a cutting, shooting, loading cycle moves from place to place.

Two shuttle-car dumping stations are maintained on the belt, and the cars are moved on designated runways that require a minimum of time to change positions under the loader.

A Jeffrey Colmol continuous mining unit employs a 7-man crew with: one colmol, two shuttle cars, one mother belt, and one car spotting hoist. Rooms are driven on 45-foot centers, 19 feet wide, while headings are driven on 60-foot centers, 19 feet wide. The headings are kept advanced 100 to 200 feet ahead of the room development. After rooms get started on the butt, three rooms are driven 300 feet and the pillars off the first room are then extracted. From here the sequence goes on with a room being driven and then a set of pillars being extracted, always having two or more rooms open for escapeway and ventilation. Two shuttle cars operate back and forth from the belt as is done with the joy loader.

A Joy continuous miner set-up, with a 6-man crew, consists of one Joy continuous miner, one shuttle car, one

surge car, one mother belt, and one car spotting hoist. This "miner" drives all places 16 feet wide on centers the same as those used with the colmol. Only one shuttle car travels back and forth while the other stays behind the machine for surge coal between trips.

Timbering by props, on 4-foot centers, is carried out in rooms and pillars, while 4" x 6" x 12' wooden cross-bars are used under broken top. In more severe roof conditions, 40 to 60-pound steel rails are used in place of wooden

(Continued on Page 21)



A.B.C. Coal Company of Lisbon, Ohio strips better than 425 rocky yards of overburden per hour to uncover coal seams 35' below the surface at their operation near Lisbon. Pictured is a Manitowoc Model 4500 dragline equipped with a 6 Yd. dragline bucket for the job. A.B.C. has done no blasting on this project and are using the same rig to backfill stripped areas once the coal has been mined out.



Jeffrey's A9A Hand-Held Hydraulic Drill weighs only 25 pounds

Miners like this new Jeffrey drill. A strong aluminum housing makes it light in weight. Location of the two hose connections at the rear of the housing on a centerline with the handles gives it good balance. Drilling is easier and less tiring.

The drill is faster, too. As many as fourteen 1 3/8" holes, 9 feet deep, have been drilled in a five minute period. The axial piston-type hydraulic motor is more efficient than the internal-rotor-type, and allows higher speed operation without any increase in oil supply.

The amount of pressure applied to the drill's operating lever, conveniently located along one handle, permits a wide range of auger speeds. Slow auger speed is necessary for starting a hole. The drill stops instantly when the handle is released.

Leaflet 893 describes the A9A Drill. For a free copy, write to The Jeffrey Manufacturing Co., Columbus 16, Ohio.



JEFFREY

MINING • CONVEYING • PROCESSING EQUIPMENT •
TRANSMISSION MACHINERY • CONTRACT MANUFACTURING



Galion Allsteel's new Model STM (SP) Transporter, equipped with a self-powered hydraulic system, is shown with Galion's Model HH Hitchhiker.



Fast, flexible operation is aided by the drill arm swing of 10' 9 1/2" right and left of center, reducing truck maneuvering.

for full time roof bolting, the 56-RDR Drilling Machine

(PATENTED)

Big, sturdy, easy to maneuver and fast drilling . . . the Jeffrey 56-RDR Drilling Machine is designed for the continuous operation demanded in busy mines.

Check these features: the Jeffrey 56-RDR Drilling Machine can bolt a wide room from one position. Drill boom controls are centralized and within convenient reach of the operator. Its size and stability enable the unit to carry generous quantities of roof bolting materials and drill supplies. The Jeffrey cable reel reduces wear on cable, holding down maintenance costs.

Bulletin 831-A describing Jeffrey Drills and Drilling Machines will be sent to you free. The Jeffrey Manufacturing Company, Columbus 16, Ohio.



JEFFREY

MINING • PROCESSING • CONVEYING EQUIPMENT
TRANSMISSION MACHINERY • CONTRACT MANUFACTURING

YOUR NEW EQUIPMENT DEPARTMENT

Designated Model STM (SP), a new tandem axle trailer dump for use with single axle tractors and equipped with a self-powered hydraulic hoist, is announced by Galion Allsteel Body Company, Galion, Ohio.

Designed for materials hauling use in mixed fleets, the new trailer dump is fitted with a complete hydraulic system including an auxiliary engine, hydraulic pump, spool type control valve and hydraulic oil reservoir, as well as Duo-scope hoist cylinders.

According to the manufacturer, Model STM (SP) minimizes dispatching problems and reduces equipment investment in mixed fleets since fleet tractors need not be equipped with power take-off driven hydraulic pump kits. Any conventional tractor can be used with the self-powered trailer dump. Cost of the self-contained hydraulic system is said to be only twice that of one tractor-mounted pump kit.

The new unit is also reputed to be ideal for use in shuttle operations in which the loaded trailer is dropped by the tractor and the load is dumped as required, while the tractor returns an empty trailer for reloading. Self-powered trailer dumps also facilitate the use of leased tractors, says the manufacturer.

The self contained hydraulic system of Model STM (SP) is powered by a 15 h.p., 2 cylinder, air cooled gasoline engine. A 2 stage oil bath air cleaner with pre-cleaner and stellite-faced valves afford long engine life under severest operating conditions, the manufacturer claims. A clutch-equipped gear reduction unit, mounted as a part of the engine assembly, drives a Galion hi-volume hydraulic pump through a short drive shaft. Electric starting is offered as optional equipment. The engine is said to provide fast operation of Model STM (SP) Transporter's Duo-scope hoists and the system has adequate reserve capacity for powering Model HH Hitchhiker's hoists in "train" operation.

YOUR NEW EQUIPMENT

(Continued from Page 17)

cost; Tru-Dimension tracks designed for long life and maximum toughness of all parts; and extra long life ceramic master clutch lining.

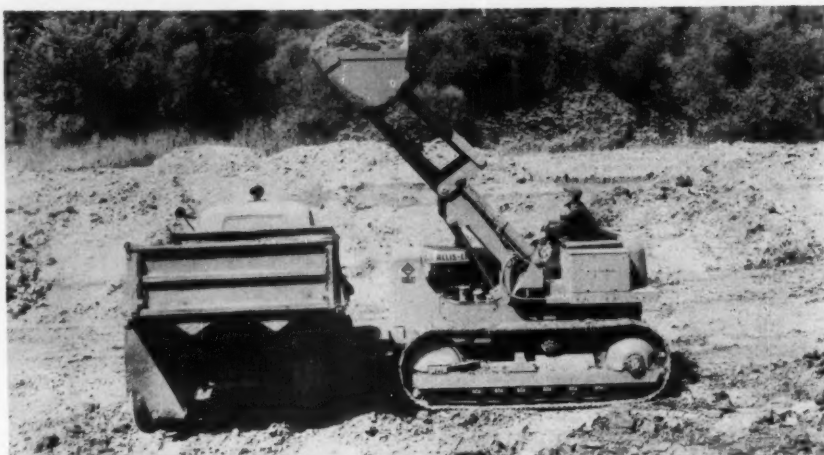
The heart of the HD-6 and HD-6G's newly engineered power train is the Allis-Chalmers HD-344 Diesel engine, a four-cylinder, four-cycle unit that develops 57 net flywheel h.p., 45 h.p. at drawbar and 55 h.p. at the belt.

In the HD-6 the maximum drawbar pull is approximately 12,650 pounds. It has five forward speeds ranging from 1.5 mph in first to 5.5 in fifth gear, and 2 mph in reverse. The HD-6G has four forward speeds which also range from 1.5 to 5.5, and two reverse speeds at 2 to 4.1 mph.

Ease of operation, visibility, and other operator comforts incorporated into both new tractors include foam rubber seat and arm rests covered with weather-resistant plastic; tapered hood and narrow cowl that give operators a clear view of front-mounted equipment; conveniently located, easy operating clutch levers and brake pedals and time-saving shift pattern. On the HD-6 daily lubrication has been eliminated on everything except normal engine care. This means extra protection against lubrication failure at a minimum of operator time and effort.

At no extra cost, the HD-6 offers heat-treated track shoes; positive seal, roller bearing truck wheels, idlers and support rollers which require lubrication only once each 1000 hours of operation; full width crankcase guard; muffler; 24-volt electric starting and lighting equipment; and front bumper.

The HD-6G, in addition, also offers as standard equipment six truck wheels per side with 83 3/16" of track on the ground for maximum stability without use of counterweights; 1 1/3 cu. yd. two position bucket; new type shovel hydraulic system with triple filter protection; semi-grouser track shoes; full truck frame guard equipment; heavy duty front idlers; pusher fan; and "Wrap-Around" radiator guard.



SCOTTDAL MACHINE, FOUNDRY & CONSTRUCTION CO.

DEPT. CM

BOX 51

SCOTTDAL, PA.

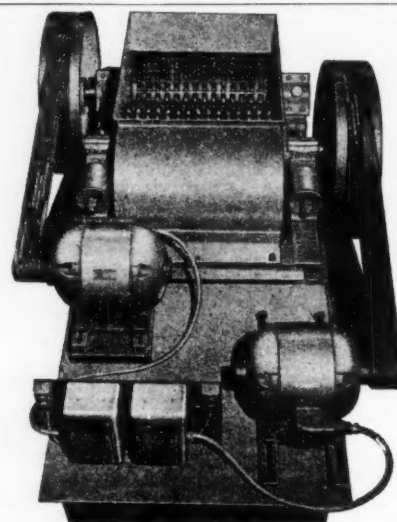
DOUBLE ROLL

COAL CRUSHER

EFFICIENT . . . produces a more uniform product!

ECONOMICAL . . . uses less power!

BOOSTS . . . sales—profits!



NO. 63 SPECIAL — 2 Motor Drive — Produces a Product 3/4" to 8". Equipped with Two Grooved Flywheels. (No Gears)

Efficient and practical the shredding action of the crusher's tooth studded double rolls turns out a more consistent product. Quality produced forged steel tooth gears, welded steel base, bronze bushed journal bearings, welded steel hopper and grooved flywheels.

Room and Pillar And Longwall Mining

(Continued from Page 18)

Following are some tonnages of the equipment just described that were taken over periods when fair conditions prevailed with equipment in good condition:

Joy Continuous Miner	
192 tons per shift	32 tons per man
Jeffrey Colmol	
245 tons per shift	35.0 tons per man
Joy Loader	
259 tons per shift	25.9 tons per man

Although the newer types of heavy equipment require much more attention in the way of mechanical repairs and maintenance, at a high cost, the compensating increase in tonnage is sufficient to warrant their use. There is little doubt that continuous haulage will soon be available for use with the new continuous mining machines. The Joy Extensible Belt and the Jeffrey Molveyor in use at our mine are yielding encouraging if not as yet entirely satisfactory results.

The use of Longwall mining at Lancashire No. 15 has shown the possibility of complete extraction, continuous haulage, self-maintained ventilation, and positive roof control. These features have not always been available in room-and-pillar mining and Longwall has aroused much thought and interest in our mining industry.

Our Longwall with an eleven man crew has one Samson stripper, one Samson cutting machine, one Mavor and Coulson CM chain conveyor, two 14-inch flight conveyors, one 30-inch mother belt, two hoists, 75 pre-fabricated steel chocks with wooden blocks, and 400 Dowty hydraulic props.

In this system of mining the cutting machine starts production by pre-top-cutting the face over its entire length. The machine cuts in only one direction at a rate of ten feet per minute and precedes the stripper one way and follows it the other. The cutting machine is mounted on the conveyor and has a capstan drive. There is enough clearance to permit passage of coal while cutting and stripping.

The stripper travels about 4 feet per minute and takes an average strip of 2½ feet. It has averaged better than 1½ strips per shift. Because of broken bottom in the entries, it is necessary

to cut 12-foot stables to give the stripper a start on its traverse across the face.

Roof control has been good with all timbering done on producing shifts. Chocks are kept on 5-foot centers with two dowty props between them along the waste line. A single row of props on 4-foot centers is kept along the conveyor and a row is set between the conveyor and chocks when the conveyor advances.

Chocks are set ahead every time the face advances 2½ feet, although the advance of the entire face is usually not complete until another 2½-foot strip is under weigh.

Chocks are usually advanced once each shift with full caving behind them.

Coal is carried from the CM conveyor to a 14-inch flight conveyor that dumps on a similar conveyor which in turn crosses over to the 30-inch belt. About every 200 feet the flight conveyors are advanced, and the belt is taken off as the heading stumps are retreated by loading machines.

Our Longwall system has averaged about 190 tons per shift.

Although Longwall has found a place in American mining, it is not likely to replace our present systems rapidly. It has a great potential and it is possible that the development of mechanized roof support and high-production face equipment may in time bring it into a leading position.

bars. All places are rock dusted and each butt heading carries from 7000 to 10,000 cubic feet per minute of fresh air. Each continuous miner has water sprays to lay dust.

Supervision is close on production with a face boss on each loading unit and an assistant foreman in charge of from one to three units. Each working place is examined twice each shift by state-certified firebosses and twice each shift by a certified assistant mine foreman. A mechanic works on the idle third shift on maintenance and repair.

Coal is conveyed from the mine in 8-ton capacity mine-cars over 60-pound rails with a 42-inch track gauge. From the main side-track, placing and gathering is conducted from each section by two locomotives. The lead motor is either 15 or 20 tons while the tail motor is either 8 or 10

tons. The two motors handle 10 to 15 cars on each trip over a distance varying from 1½ to 2½ miles. The two miles from the main side track has rope haulage with a 25-ton locomotive leading trips in and following trips out.

Pumping is no great problem with about one million gallons a day being pumped to the surface. It is necessary to use wooden or plastic pipe line because of the high acidity of the water. Because of the necessity for high pressures, iron pipe is used to carry water used to spray where the mining machines are operating at the face.

Our main pumps and Longwall use 440 volt AC power while the remainder of the mine uses direct current at 250 volts. Power is supplied through bore-holes from rectifiers and synchronous converters. Working units seldom get over 3,000 feet from a power substation and the current is carried through a 1,000,000 circular mill feed-line, section 9 trolley wire and double bonded haulage rails. From the haulage lines to working units, power is carried by 1,000,000 circular mill cables with a third cable for ground.

Outside surface facilities for loading and preparing the coal for shipment include a rotary dump, a 1,000-ton storage bin, a preparation plant with 4 air tables for minus ½-inch coal, and a hydro-separator for servicing plus ½-inch coal; and for equipment: a car repair shop, a large mechanical shop, an electrical shop, a combined wash-house and lamphouse, and a supply house.

Before cleaning, the raw coal averages about 12% ash and 2.65% sulphur, and after cleaning about 7% ash and 1.50% sulphur. The coal is sized and shipped as seven different commercial products.

With the prevailing natural conditions, this mining system has held up under the necessity of meeting the demands of higher labor costs, higher material costs, the increased competition of other fuels, and high competition in our own industry. The continual introduction of new equipment and the adaptation of it to our system of mining has been costly, but it has been only by this means that we have maintained our position of leadership in the industry.

NOW at BECKWITH MACHINERY COMPANY

**BONDED
BUY**

USED EQUIPMENT

Item 955-WV159—Caterpillar D7 Tractor mounted w/LaPlant Choate Angledozer and LeTourneau D.D. Cable Control. This unit was just returned from a one month rental. Prior to rental, we installed new master clutch brake, rebushed steering control lever and relined cable control cone. Unit is in good running condition. F.O.B. Clarksburg, West Va. "BUY AND TRY" \$5,000.00

Item 855-P352—Caterpillar D6-16 Hydraulic with 1 3/4 yd. Bucket. Installed new ring gear on flywheel, overhauled bendix and starting engine, replaced two bottom rollers, reconditioned master clutch, radiator and oil cooler. F.O.B. Pittsburgh, Pa. "CERTIFIED BUY" \$4,500.00

Item 1054-C175—Int. T9 Gasoline Tractor, mounted with Bucyrus-Erie Hyd. straight Blade, S/N TCB34336-17BKC—Track roller guards, new paint and decals. F.O.B. Clearfield, Pa. "BUY AND TRY" \$3,500.00

Item 255-E154—Lorain Shovel. Model TL20 equipped with D315 Cat Engine in very good condition. F.O.B. Erie, Pa. \$9,000.00

Item 955-P364—Caterpillar D2-50" Gauge Tractor mounted w/Hyster D2N Towing Winch, Diesel engine reconditioned; electric starter on gasoline starting engine, running gear 60% good, new seat, fenders and battery box. Machine has good appearance and is in good operating condition. F.O.B. Pittsburgh, Pa. \$3,500.00

Item 954-C161—Allis-Chalmers HD14 Tractor w/Baker Hyd. Blade. In running condition. F.O.B. Clearfield, Pa. "AS IS, WHERE IS" \$2,200.00

Item 954-WV126—P & H Model 255A 3/4 Yd. Shovel w/6 Cyl. Waskeshaw Gas Engine. Engine is completely rebuilt and overhauled master clutch. Repaired radiator, generator, starter and carburetor and washers. Complete overhaul of all hyd. cylinders and controls. F.O.B. Clarksburg, West Va. "BUY AND TRY" \$8,750.00

Item 855-E173—Caterpillar D2-50" Tractor. Has had only 96 hours of use. Equipped as a logging tractor. F.O.B. Erie, Pa. \$5,300.00

Item 655-E168—Caterpillar D4 Standard Gauge Tractor, equipped with 4A blade and #44 Hydraulic Control. Machine is in excellent condition with new tracks, new rockers, sprockets, top carrier rollers. Engine rebuilt one year ago. Transmission and steering clutches repaired. New cutting edge on blade. F.O.B. Erie, Pa. "BONDED BUY" \$6,500.00

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6550 Hamilton Avenue, Pittsburgh, Pa.
361-369 Congress St., Bradford, Pa.
Old Town Road, Clearfield, Pa.
1356 E. 12th Street, Erie, Pa.
E. Broadway, Farrell, Pa.
Buckhannon Pike, W. Va. Route 20 (So.),
Clarksburg, West Va.

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Handle more cars better—cost less to install and maintain. Foster stocks all Rail Sections 12# thru 175#, Switch Material and Track Accessories.

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EQUIPMENT FOR SALE

P & H 655B—Shovel #11576

22 ft. boom. 20' sticks, 1 1/2-yd. dipper. Cat engine D-13000

Marion 40A—Dragline #8513

70-ft. boom, 3-yd. bucket. Light plant. New Cummins engine. Good condition

P & H 955 Dragline #7491

2 1/4-yd. bucket. Cat. engine #D-17000. Good condition

Marion 111M Shovel #8871

3 3/4-yd. dipper. Twin engine diesel. Light plant. Boom 50' sticks

Greensburg-Connellsville Coal & Coke Company

1100 UNION TRUST BLDG. PGH. 19, PA.
ATlantic 1-1576

CATERPILLAR

Diesel Generator Set

125 KVA, 220-440 volts, 900 RPM, 3-phase. Originally used only during power failure.

A-1 Condition

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Phone 701, Philipsburg, Pa.

Shovels — Draglines

Drills — Tractors

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190-B Bucyrus-Erie Electric 8 yd. shovel
170-B Bucyrus-Erie Electric Hi-Lift 5 yd. shovel
1600 P&H 6 yd. electric shovel
2400 Lima 6 yd. diesel shovel
2400 Lima 4 yd. Hi-Lift shovel
120-B Bucyrus-Erie electric 5 yd. shovel
1400 P&H 4 yd. electric shovel
111-M Marion 3 1/2 yd. diesel shovel
4161 Marion 5 yd. electric shovel. Worked about three years.
1201 Lima 3 1/2 yd. diesel shovel
1201 Lima Hi-Lift diesel shovel 42' boom, 32' stick, 2 1/2 yd. dipper.
1201 Lima Semi-Hi-Lift diesel shovel, 36' boom, 27' stick, 3 yd. dipper
3500 Manitowoc Hi-Lift diesel shovel 45' boom, 35' stick, 2 yd. dipper
111-M Marion Hi-Lift diesel shovel 43' boom, 23' stick, 3 yd. dipper
40-A Marion Hi-Lift diesel shovel 45' boom, 34' stick, 2 1/2 yd. dipper.
450-W Bucyrus-Erie diesel dragline 165' boom, 13 yd. bucket
625 Page diesel dragline 150' boom, 9 yd. bucket
5-W Bucyrus-Erie diesel dragline 125' boom, 5 yd. bucket
2400 Lima diesel dragline 130' boom, 5 yd. bucket.
4500 Manitowoc diesel dragline 120' boom, 5 yd. bucket
1055 P&H diesel dragline 80' boom, 4 yd. bucket
1201 Lima diesel dragline 85' boom, 3 yd. bucket. Independent boom hoist.
3500 Manitowoc diesel dragline 85' boom, 2 1/2 yd. bucket
600 Reich Heavy truck mounted rotary air drill
50R B-E Blast Hole Drill—drills up to 12' hole
Quarrymaster Drill with 2-500 cu. ft. compressors
58-BH Joy Champion Rotary Air Drill
56-BH Joy Middle Weight Rotary Air Drill

Also 42-T, 29-T, and 27-T Well Drills

MANY GOOD USED TRUCKS

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Marion 7200—5 yd. dragline, 140' boom, used approximately 4 years, excellent condition, Walker type.

Hoist—Coal or ore service, 850 hp, drum 12'x13', wraps 12000' of 1 3/4 rope, excellent operating condition, priced to sell.

Osgood 1006 Strip Shovel—New in 1951, used approximately 3 years. Price F.O.B. mine \$25000.00.
McCarthy Recovery Drill—With 132", 20" augers, 150 hp gas motor, hydraulic drive, 2 20" inch heads.

Marion 34-yd. Stripping Shovel, available at this time.

Westinghouse 300 Kw-MG set, 275 volt, DC, complete 450hp Syn. 2200 volt motor, starting E. and controls.

5000 V. S. #3 Stl. mine ties for 40 lb. rails and 42" gauge. Low price.

5000 ft. #8 two-conductor. rubber covered concentric cable, approved.

Jeffrey 74 BR coal drill on rubber tires. Full hydraulic, new in 1951, low price.

Jeffrey 29U cutter, on "Cats" in good operating condition

Almost new, Fairfield Conveyor, full hydraulic, on rubber tires, diesel motor, 18"x36' conveyor. Low price,, husky.

WANTED

10TV or 11RV Joy cutting machine on rubber, for local mine.

T. L. (Les) SIMPSON MACHINERY AGENT AND BROKER

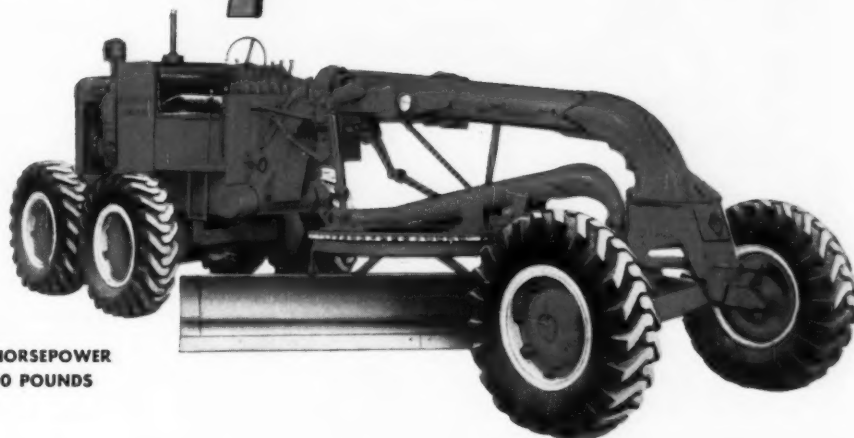
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ALLIS-CHALMERS
BIG NEW

Forty Five MOTOR GRADER

NEW BIG SCALE
PERFORMANCE
NEW OPERATING EASE
AND COMFORT

120 HORSEPOWER
23,800 POUNDS

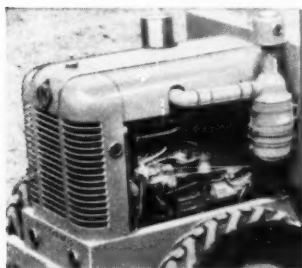


The *Forty Five* is a truly modern heavy-duty motor grader . . . designed for progress and built to *today's* standards of accuracy, dependability, operating ease and low cost. On road construction or maintenance work, you'll see all the advantages of balanced power, weight, traction and proper speeds . . . plus brand new advantages for the operator and mechanic that no other heavy-duty grader offers.

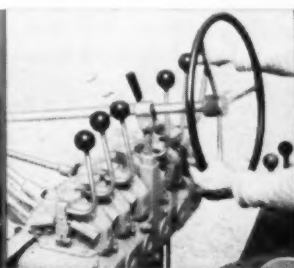
We invite you to check the features shown here. Then for the full story on the *Forty Five* — including extra-big clearances, exclusive ROLL-AWAY* moldboard, single-member tubular frame, fully enclosed power steering, new long-wearing ceramic clutch lining and unit construction for matchless service accessibility — see your nearby Allis-Chalmers dealer.

*ROLL-AWAY is an Allis-Chalmers trademark.

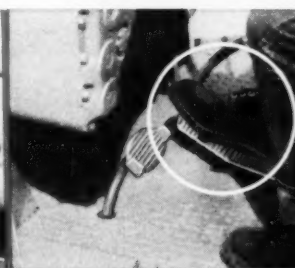
MAJOR ADVANTAGES THAT MEAN MORE PRODUCTION . . . LESS MAINTENANCE . . . EASIER AND BETTER OPERATION



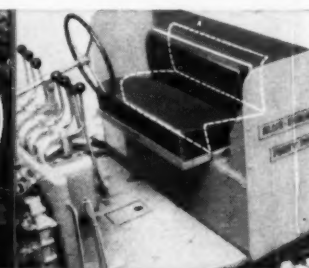
Powerful new Allis-Chalmers diesel featuring exclusive "follow-through" combustion for smooth performance, clean combustion, extra long life.



All-new toggle-type controls give a *Forty Five* operator precision control with positive "feel" — easy finger-tip action regardless of load.



New accelerator-decelerator pedal lets the operator change engine speed with his foot — without touching his hand-throttle setting.



"Box seat" comfort and visibility — Foam-rubber seat adjusts for sit-down or stand-up operation. Roomy platform has tapered corners for top visibility.

CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS



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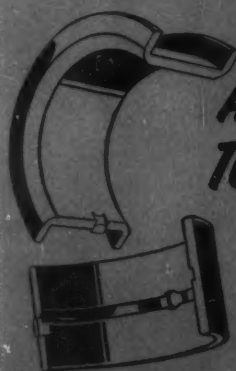


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THE ARCH WITH ITS CAREFULLY SCULPTURED KEYSTONE WAS FIRST USED ABOUT 500 B.C. TODAY CENTURIES-OLD BUILDINGS USING THE KEYSTONE STILL STAND... A LONG-LIFE TRIBUTE TO CAREFUL DESIGN AND WORKMANSHIP.

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CAT VALVES HAVE DEMONSTRATED THEIR QUALITY DESIGN AND MANUFACTURE BY SUCCESSFULLY WORKING FOR THOUSANDS OF HOURS. THEY ARE PRECISION-MADE OF SPECIAL LONG-LIVED, HEAT RESISTANT ALLOY STEEL.



BEARINGS AN IMPORTANT KEY TO LONG ENGINE LIFE

LIKE THE KEYSTONE, CAT ALUMINUM-ALLOY MAIN BEARINGS RESIST CORROSION, CARRY SEVERE LOADS, GIVE LONG LIFE, AND ARE MADE TO CLOSE TOLERANCES.

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Advertiser's Index

COAL MINING

December, 1955

Allis-Chalmers	2, 3, 23
Anderson Equipment Co.	22
Beckwith Machinery Company	11, 12, 13, 14, 22, 24
Esco Electric Steel Foundry Co.	Inside Back Cover
Foster Co., L. B.	22
Frank Swabb	22, 24
Greensburg Machine Co.	22
Harold C. Lusk Co.	4
Highway Equipment Co.	Front & Back Cover
Jeffrey Mfg. Company	18, 19
Licking View Tool & Machine Co.	4
Meyer Brothers	22
Mine Safety Appliances Co.	Front Inside Cover
Moore-Flesher Hauling Co.	4
Northeastern Supply Co.	17
Ohio Machinery Co.	11, 12, 13, 14
Salem Tool Company Inc.	1, 4
Schroeder Brothers	17
Scottdale Machine Foundry and Construction	20
Simpson, T. L. (Les)	22
Walker Machinery Co.	11, 12, 13, 14

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Lima 2400—67' boom—50' stick 4 yd. dipper—Caterpillar diesel 9000 hours total service.

4500 Manitowoc—120' boom—5 yd. bucket—Caterpillar diesel.

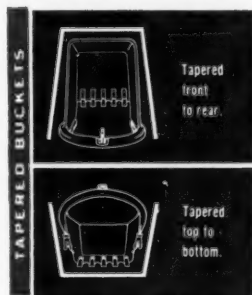
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INCREASE YARDAGE



with **NEW ESCO**



TAPERED DRAGLINE BUCKETS

DIG FASTER—Bucket tapers from very wide front opening to proportionally smaller rear area so a greater portion of

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DUMP CLEANER - FASTER—Taper from front to rear and from bottom to top allows load to drop free of the bucket. Height of box-sectioned tubular arch is equal to the width of the bucket at the hitches—load dumps clear of arch.

REDUCE DOWNTIME—Tapered design reduces loading and dumping friction—cuts wear to an absolute minimum. An extremely high strength-weight ratio is made possible by the use of alloy steel castings and all-welded construction.

ESCO tapered buckets have been proved by thousands of hours of operation all over the world.



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INDUSTRIAL
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your equipment dollar,
always remember...

it pays to plan with

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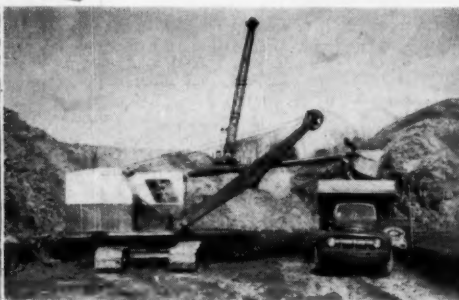


On your next stripping job, call in your Highway representative early.

He will save you time and money by suggesting exactly the right equipment for your job.



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High against the sky is this Lima 1201 dragline on the A. W. LOTZE operation, Petersburg.



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